

CLAIMS

1 1. A skin treatment apparatus, comprising:
2 a fluid delivery member with a tissue interface surface that remains
3 conformable to a skin surface as the tissue interface surface is applied to a
4 surface of the skin; and

5 a thermal energy delivery device coupled to the ^{fluid delivery member} ~~membrane~~ in a
6 position to transfer thermal energy to an electrolytic media that passes
7 through the fluid delivery member.

1 2. The apparatus of claim 1, wherein the thermal energy delivery
2 device is positioned in an interior of the fluid delivery member.

1 3. The apparatus of claim 1, wherein the thermal energy delivery
2 device is positioned at an exterior surface of the fluid delivery member.

1 4. The apparatus of claim 1, wherein the thermal energy delivery
2 device is positioned at the tissue interface surface.

1 5. The apparatus of claim 1, wherein the thermal energy delivery
2 device is at least one RF electrode.

1 6. The apparatus of claim 1, further comprising:
2 a fluid passage lumen coupled to the fluid delivery member.

6 7. The apparatus of claim 1, wherein the tissue interface surface
of the fluid delivery member has a porous surface.

8. The apparatus of claim 1, wherein at least a portion of the
fluid delivery member is a membrane.

9. The apparatus of claim 1, further comprising:
a cooling fluid lumen coupled to the fluid delivery member.

7 10. The apparatus of claim 1, further comprising:
a sensor coupled to the fluid delivery member.

Sub A2 11. The apparatus of claim 10, wherein the sensor is positioned at
the tissue interface surface of the fluid delivery ^{member} device.

9 12. The apparatus of claim 10, further comprising:
a feedback device coupled to the energy delivery device and the
sensor, the feedback device being responsive to a detected characteristic of a
tissue site and provide a controlled delivery of thermal energy.

Sub A3 13. An apparatus for treating a skin surface, comprising:
a fluid receiving member;
a thermal energy delivery device coupled to the fluid receiving
member;
an electrolytic media positionable in the fluid receiving member, the
thermal energy delivery device being positioned in the fluid receiving

7 member to transfer thermal energy to the electrolytic media, wherein a
8 selected collagen containing tissue site under the skin surface receives the
9 thermal energy and creates a tightening of the skin surface.

1 14. The apparatus of claim 13, wherein the fluid receiving
2 member includes a tissue interface surface.

1 15. The apparatus of claim 14, wherein at least a portion of the
2 tissue interface is porous.

1 16. The apparatus of claim 13, wherein at least a portion of the
2 fluid receiving member is a membrane.

1 17. The apparatus of claim 13, wherein the fluid receiving
2 member includes a conformable tissue interface surface.

1 18. The apparatus of claim 17, wherein the tissue interface
2 surface is conformable to the skin surface.

1 19. The apparatus of claim 17, wherein the tissue interface
2 surface remains conformable to a skin surface as the tissue interface surface
3 is applied to a surface of the skin.

1 20. The apparatus of claim 13, wherein the thermal energy
2 delivery device is positioned in an interior of the fluid ^{receiving} delivery member.
N.A.

1 21. The apparatus of claim 13, wherein the thermal energy
2 delivery device is positioned at an exterior surface of the fluid delivery
3 member,

1 22. The apparatus of claim 13, wherein the thermal energy
2 delivery device is at least one RF electrode.

1 23. The apparatus of claim 1, further comprising:
2 a fluid passage lumen coupled to the fluid delivery member.

1 24. The apparatus of claim 1, wherein the tissue interface surface
2 of the fluid delivery member has a porous surface.

1 25. The apparatus of claim 1, wherein at least a portion of the
2 fluid delivery member is a membrane.

1 26. The apparatus of claim 1, further comprising:
2 a cooling fluid lumen coupled to the fluid delivery member.

1 27. The apparatus of claim 1, further comprising:
2 a sensor coupled to the fluid delivery member.

1 28. The apparatus of claim 27, wherein the sensor is positioned *of at*
2 the tissue interface surface of the fluid delivery device.

v. A-

1 29. The apparatus of claim 27, further comprising:

2 a feedback device coupled to the energy delivery device and the
3 sensor, the feedback device being responsive to a detected characteristic of a
4 tissue site and provide a controlled delivery of thermal energy.

1 30. A method for tightening an external surface of a skin with an
2 underlying collagen containing tissue, comprising:
3 providing a thermal energy delivery device with an energy delivery
4 surface;
5 positioning the thermal energy delivery surface on the external
6 surface of the skin;
7 creating a reverse thermal gradient through the surface of the skin to
8 sufficiently heat an underlying collagen containing tissue, wherein a
9 temperature of the external surface of the skin is lower than a temperature of
10 the underlying collagen containing tissue;
11 detecting a temperature of the external surface of the skin;
12 heating the underlying collagen containing tissue in response to a
13 detected temperature of the external surface of the skin; and
14 tightening at least a portion of the external surface of the skin.

1 31. A method for tightening skin, comprising:
2 providing a thermal energy delivery device;
3 positioning an energy delivery surface of the thermal energy delivery
4 device on an external surface of the skin;
5 creating a reverse thermal gradient through a surface of the skin
6 while heating underlying collagen containing tissue, wherein a temperature of

7 the external skin surface is lower than a temperature of the underlying
8 collagen containing tissue;
9 heating the underlying collagen containing tissue without creating a
10 necrosis of living cells (in the epidermis);
11 contracting at least a portion of the collagen containing tissue; and
12 tightening at least a portion of the surface of the skin.

11
1 32. A method for tightening skin, comprising:
2 providing a thermal energy delivery device;
3 positioning an energy delivery surface of the thermal energy delivery
4 device on an external surface of the skin;
5 creating a reverse thermal gradient through a surface of the skin
6 while heating underlying collagen containing tissue, wherein a temperature of
7 the external skin surface is lower than a temperature of the underlying
8 collagen containing tissue;
9 controlling a delivery of a sufficient amount of thermal energy
10 through an epidermis of the external surface of the skin to reconfigure at
11 least a portion of an underlying collagen containing tissue without
12 substantially creating cell necrosis in the epidermis, wherein at least a portion
13 of the surface of the skin is tightened.

Sub 45
1 33. A method for tightening skin, comprising:
2 providing a thermal energy delivery device;
3 positioning an energy delivery surface of the thermal energy delivery
4 device on an external surface of the skin;

5 heating through a surface of the skin the collagen containing tissue
6 underlying the surface of the skin, wherein a temperature of the external skin
7 surface is lower than a temperature of the underlying collagen containing
8 tissue;

9 controlling a delivery of a sufficient amount of thermal energy
10 through an epidermis of the surface of the skin to reconfigure at least a
11 portion of an underlying collagen containing tissue without substantially
12 creating cell necrosis in the collagen containing tissue, wherein at least a
13 portion of the surface of the skin is tightened.

1 34. An apparatus for applying energy through a skin epidermis
2 surface of an underlying subcutaneous layer or deeper soft tissue layers that
3 includes collagen containing tissue, comprising:

4 a membrane that conforms a contacting exterior surface of the
5 membrane to the skin epidermis surface;

6 one or more electrodes positioned in the membrane configured to be
7 coupled to an energy source;

8 an electrolytic media positioned in the membrane nd coupled to the
9 electrodes to receive energy from the electrodes and transfer energy from the
10 electrodes to the skin epidermis surface;

11 a focussing element that creates a reverse thermal gradient from the
12 skin epidermis surface to the collagen containing tissue.

1 35. An apparatus for applying energy through a skin epidermis
2 surface to an underlying collagen containing tissue; comprising:

3 an energy delivery device means;

ALL 117

650690 6464660

4 electrolytic media energy delivery means coupled to the energy delivery
5 device means to receive electrolytic energy and transfer the electrolytic
6 energy from the energy delivery device means to the skin surface;
7 the electrolytic media means delivering energy to the skin surface and
8 the energy passing through the skin surface to the underlying collagen
9 containing tissue to contract at least a portion of the collagen containing
10 tissue without substantial cell necrosis and creating a tightening of the skin
11 surface; and
12 a membrane housing means housing at least a portion of the energy
13 delivery means, the membrane means including a membrane skin surface
14 interface means.